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## Initial IP-CTS Survey Analysis by the

## Rehabilitation Engineering Research Center on

## Telecommunications Access

**2013-04-12**

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## Executive Summary

This document contains an initial analysis of a survey on Captioned Telephone Services (CTS) usage among adults with hearing loss. The survey was open for two weeks, between February 21, 2013, and March 8, 2013, and resulted in 3000 completed responses. 2014 of these were from users of special captioned telephones. The main findings are as follows:

- This survey of 2014 special captioned telephone users does not support either fraud or misuse as the source of growth in IP-CTS:
  - Differences in usage between recent CTS users and long-time CTS users appear to be small (but this needs further investigation).
  - Only 8% of special captioned telephone users report sharing their equipment with hearing household members.
  - Only 6% of special captioned telephone users report that hearing household members do not always turn off the captions or do not know how to turn them off.
- Further consumer education regarding the usage rules for CTS may be helpful:
  - Additional emphasis of the rules is indicated among consumers who use captioned telephone services and members of their households when they receive their special captioned telephone equipment.
  - Education is also indicated to improve familiarity among consumers regarding the funding source for CTS.
- Consumers rely on captions in order to achieve successful communication over the telephone:

- Almost all special captioned telephone users (over 90%) reported that the captions on their telephone are either very important or important to having a successful conversation.
- More than half of the special captioned telephone users (55%) stated that they would be unable to use the telephone at all without captions.

## **1. Introduction**

This filing has been prepared by the Telecom RERC. The Telecom RERC (RERC-TA) is a joint project of the Technology Access Program at Gallaudet University and the Trace Center at the University of Wisconsin-Madison. The RERC is funded by the U.S. Department of Education, National Institute on Disability and Rehabilitation Research, to carry out a program of research and development focused on technological solutions for universal access to telecommunications systems and products for people.

An online survey was designed and conducted by the RERC-TA to document current usage of Captioned Telephone Services (CTS) and special standalone telephone equipment by adults with hearing loss. The goal of the survey was to understand 1) the demographics, including severity of hearing loss, of people who use CTS, 2) how important the availability of captions is to them to make and receive telephone calls, 3) whether they use captions for all telephone calls, 4) whether they share their equipment for using CTS with other members of the household who do not have a hearing loss, 5) how they found out about CTS and how they obtained their equipment, and 6) what call quality problems may exist that prevent people from using CTS or result in an unsatisfactory call experience.

The data collection period for the survey began on February 21, 2013, and ran through March 8, 2013. Survey respondents were recruited via the Internet using messages on websites, e-newsletters, online news, social media, support groups (such as ALDA, HLAA, TDI, NVRC, AADB and NAD), the RERC-HE web site and social media channels, COAT's social media page, Gallaudet University's Daily Digest publication and recruiting information sent to lists. Participation in the survey was completely voluntary, so the collected responses represent a convenience sample of adults with hearing loss who may or may not be hearing device wearers, typically use captioned telephone services or are interested in captioned telephone services, and additionally have access to and are familiar with computers and the Internet.

A total of 3000 completed survey responses were collected. Respondents answered a web-based survey hosted by Surveygizmo.com that took approximately 10 minutes to complete. The survey collected information through multiple-choice, open-ended and rating scale response formats. All collected individual survey responses were anonymous and contained no identifying information so results are reported in aggregate form only.

In addition to collecting demographics and information about participants' hearing loss and device use, the survey touched on topics related to the following questions posed by the FCC in its January 24, 2013 NPRM on IP-CTS:

- 1) Is the IP-CTS growth attributable to the free distribution of equipment?
- 2) Is the equipment shared with members of the household without hearing loss, and if so, do they know how to turn captions off?
- 3) How important are the captions to IP-CTS users, and how satisfied would they be with the call experience if captions were unavailable?

- 4) Do they know that IP-CTS is intended for people with hearing loss, and do they understand that the cost of IP CTS is funded by the TRS fund?
- 5) How much of the growth of IP-CTS is related to fraud or misuse?

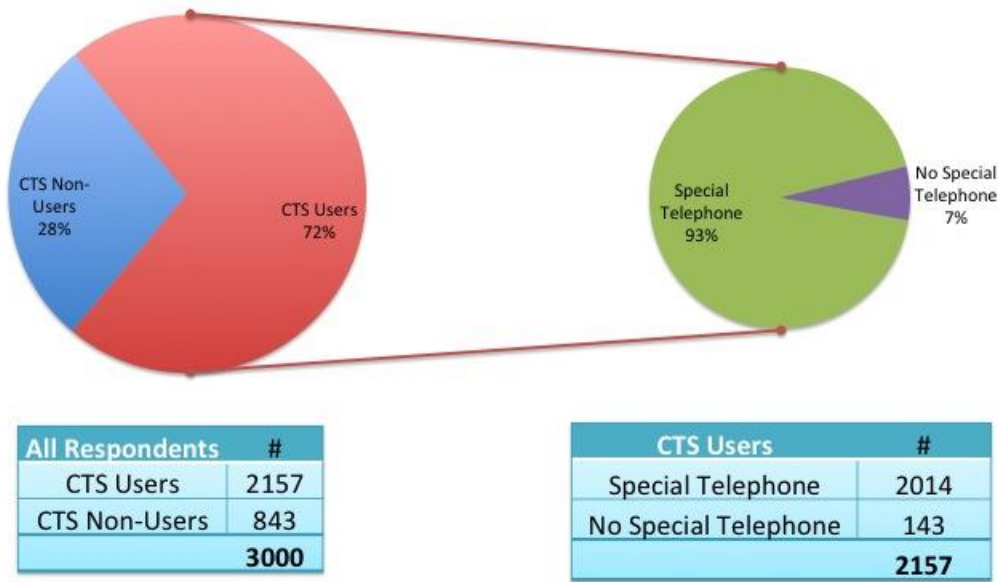
## **2. Initial Survey Results**

The following report is an initial analysis of the CTS survey results that address in whole or in part the five specific questions listed above.

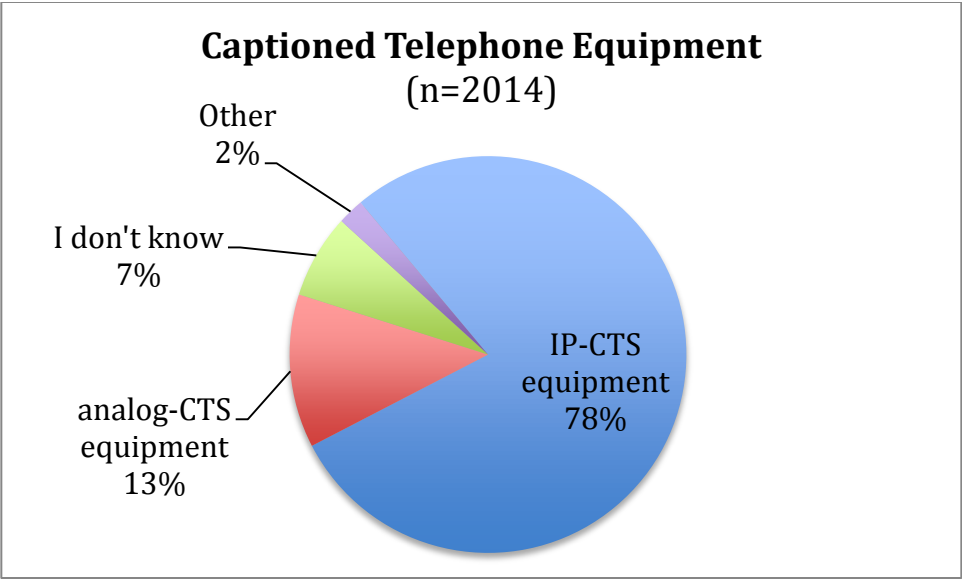
### **2.1. Captioned Telephone Use**

Of the 3000 completed survey responses, 2157 respondents (72%) were captioned telephone service (CTS) users, and the other 843 respondents (28%) did not use CTS. Among the CTS users, 2014 respondents (93%) used a special captioned telephone, while only 143 respondents (7%) used a mobile device and/or computer/Internet-phone, not a special captioned telephone, to access CTS (see Figure 1). Our sample comprised mostly special captioned telephone users of IP-CTS (1581 of 2014) along with some analog-CTS (252 of 2014) users. The remaining special captioned telephone users (181 of 2014) either did not know which equipment they used or selected the “other” response category (see Figure 2). Of the IP-CTS special captioned telephone users, about 54.1% used a CapTel phone, 45.5% used a CaptionCall phone and the rest (0.4%) used a Clarity Ensemble phone (see Figure 3). Some special captioned telephone users (12% - 247 of 2014) also used IP-CTS on a mobile device and/or a computer/Internet-phone.

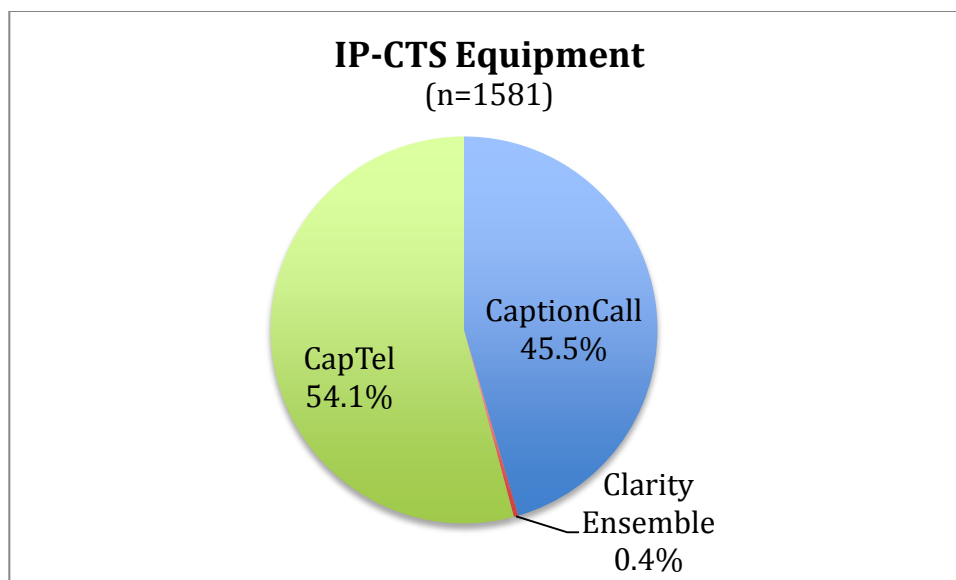
**3000 Survey Respondents**



**Figure 1**

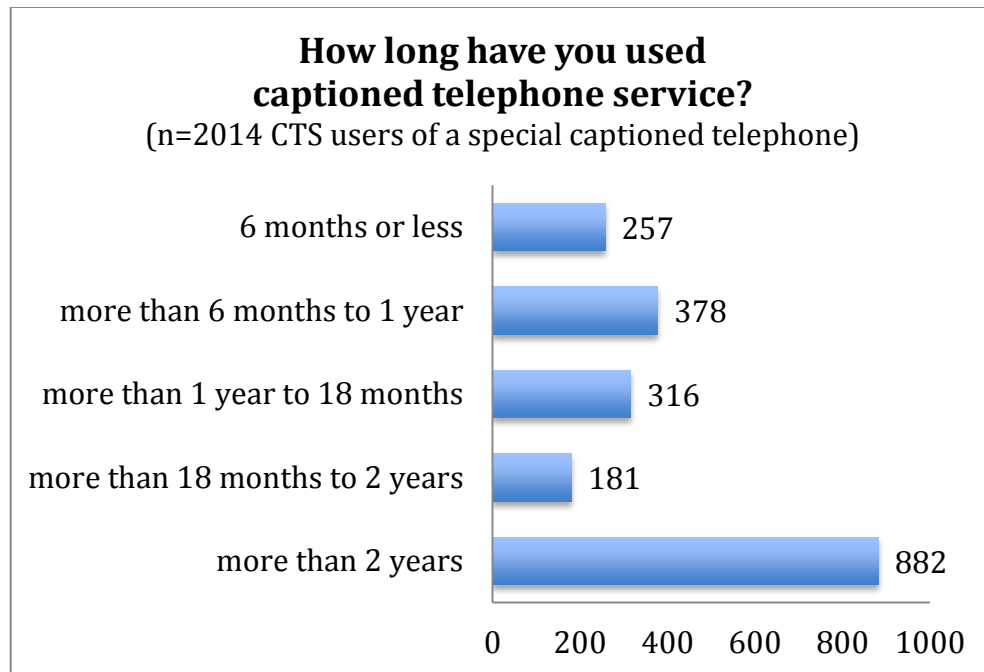


**Figure 2**

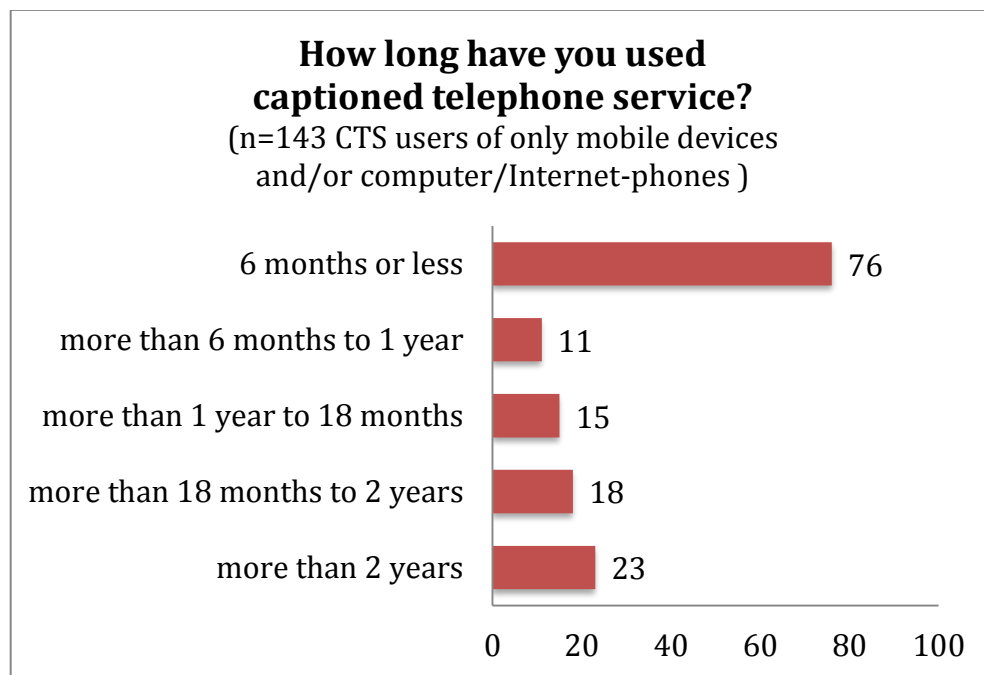


**Figure 3**

Most users of a special captioned telephone (43% - 882 of 2014) had used CTS for more than 2 years, 32% (635 of 2014) had used CTS for a year or less and the fewest (25% - 497 of 2014) had used CTS for between one and two years (see Figure 4). Although they constitute a small number of the total CTS users, most of those who only used a mobile device and/or computer/Internet-phone (61% - 87 of 143) were recent users of IP-CTS for a year or less, with 53% (76 of 143) using the service for six months or less (see Figure 5).



**Figure 4**



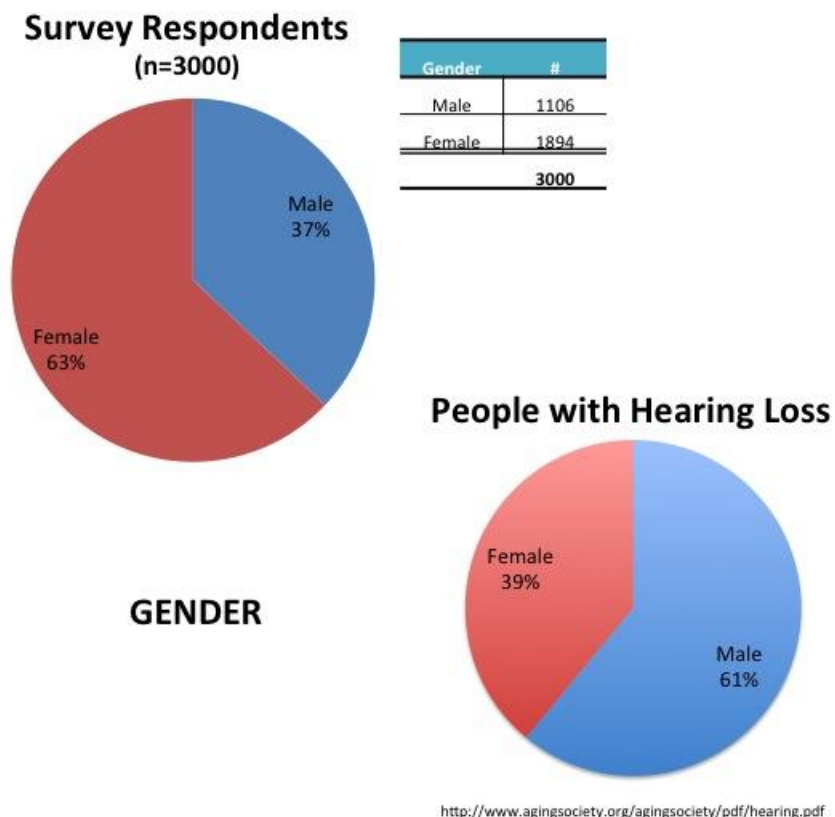
**Figure 5**

## 2.1. Survey Sample Demographics

Demographics collected included information on each respondent's gender, age, education, employment, income, household make-up, urban versus rural location, and the US region in



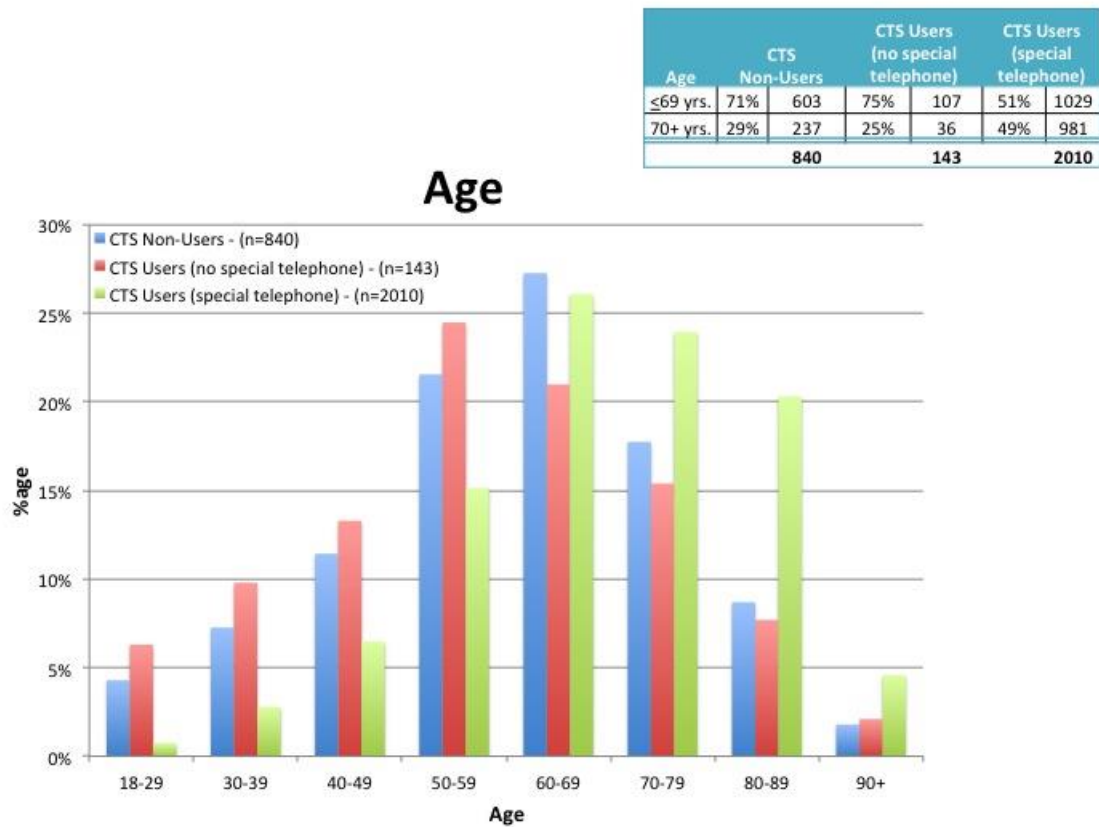
which they live. Many of our 3000 respondents were female (63%; 1894 of 3000). However, it is known that men are more likely than women to have hearing loss, and about 60% of people with hearing loss are men. While it appears men are underrepresented in our survey compared to people with hearing loss in general, we cannot with any certainty know why this is the case. The overall proportions of women and men in our survey held regardless of whether the respondents were users of CTS or not (see Figure 6). However, this was not true for the age of respondents, their employment status or their household make-up.



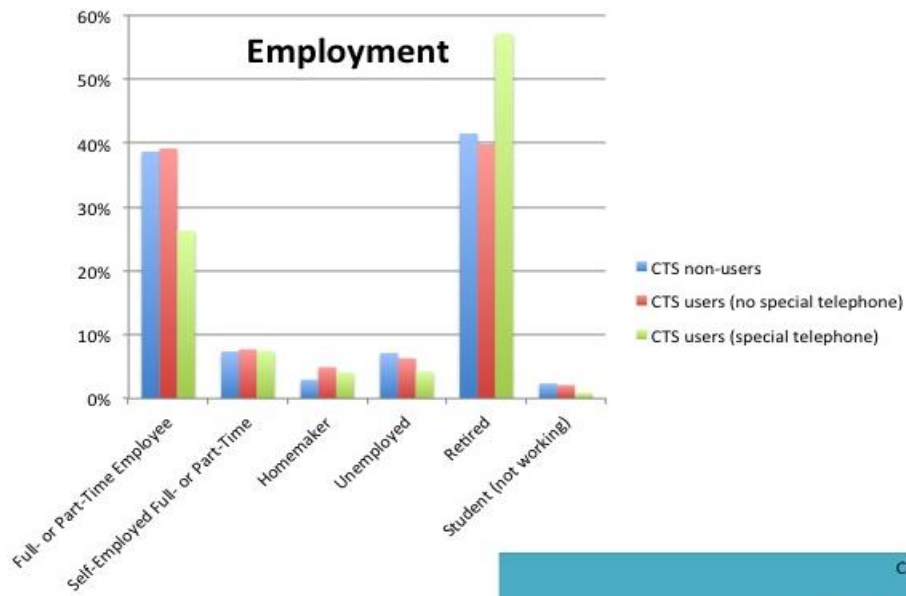
**Figure 6**

CTS users of special captioned telephones were more likely to be older, retired and to live alone than other respondents (see Figures 7, 8 & 9). About half of CTS users of special captioned telephones were 70+ years old, while 29% of non-CTS users and 25% of CTS users of

mobile devices and/or computer/Internet-phones were 70+ years old. Compared to individuals with hearing loss, our survey respondents were older, with the fewest individuals in the 18 to 44 year age range (see Figure 10).

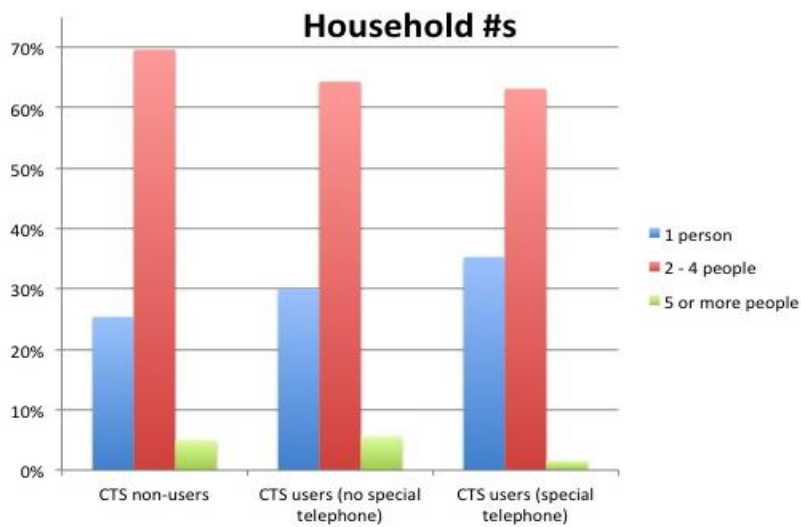


**Figure 7**



	CTS non-users	CTS users (no special telephone)	CTS users (special telephone)
Full- or Part-Time Employee	326	56	529
Self-Employed Full- or Part-Time	62	11	150
Homemaker	25	7	82
Unemployed	60	9	85
Retired	350	57	1150
Student (not working)	20	3	18
	843	143	2014

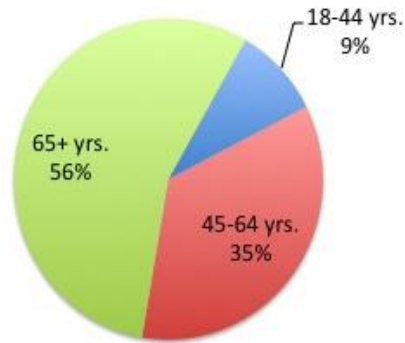
**Figure 8**



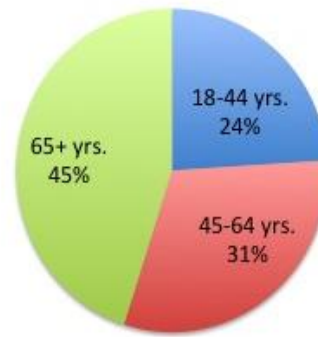
	CTS non-users	CTS users (no special telephone)	CTS users (special telephone)
1 person	214	43	711
2 - 4 people	587	92	1272
5 or more people	42	8	31
	843	143	2014

**Figure 9**

**Survey Respondents by Age**



**People with Hearing Loss by Age**

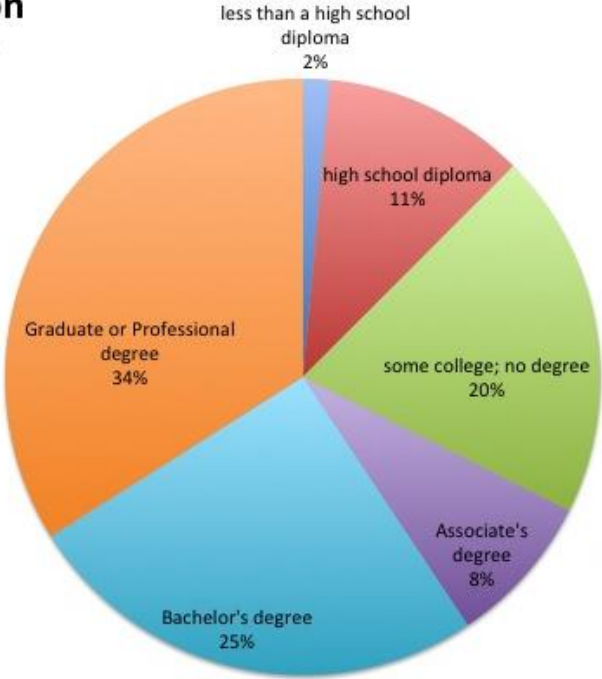


<http://www.agingsociety.org/agingsociety/pdf/hearing.pdf>

**Figure 10**

Approximately two-thirds (67%) of our survey respondents held a college degree (see Figure 11). Some respondents (29%) preferred not to provide information on household annual income. Of those who did, 21% earned less than \$25,000 per year, 14% earned more than \$75,000 per year and the rest, more than one-third (36%), earned between \$25,000 and \$75,000 per year (see Figure 12). Survey respondents came from all 50 states. Compared to the US Census by geographic region, survey respondents from the Northeast were slightly (6 percentage points) overrepresented and respondents from the South were slightly (8 percentage points) underrepresented (see Figure 13). Most of our respondents (87%) were from an urban locale, a slightly larger percentage (by +6 percentage points) compared to the US population living in an urban setting (see Figure 14).

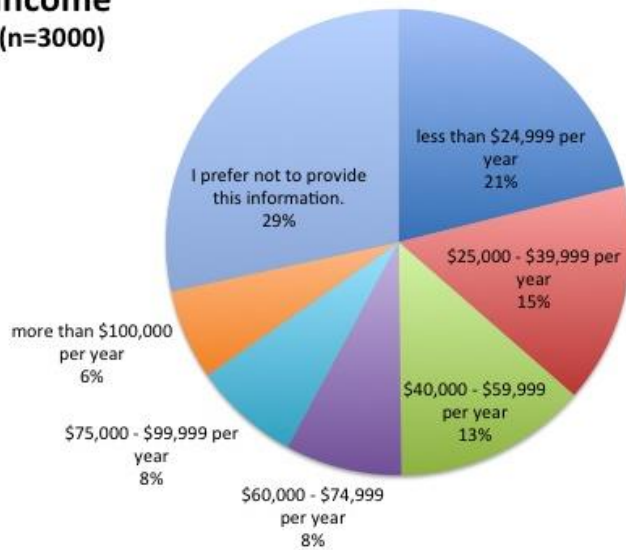
**Education**  
(n=3000)



Educational Level	#
less than a high school diploma	44
high school diploma	331
some college; no degree	597
Associate's degree	248
Bachelor's degree	761
Graduate or Professional degree	1019
	3000

**Figure 11**

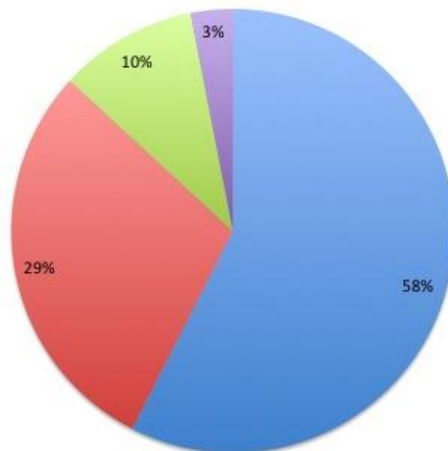
## Income (n=3000)



Earned Income	#
less than \$24,999 per year	633
\$25,000 - \$39,999 per year	459
\$40,000 - \$59,999 per year	402
\$60,000 - \$74,999 per year	244
\$75,000 - \$99,999 per year	222
more than \$100,000 per year	188
I prefer not to provide this information.	852
	3000

Figure 12

## Urban vs Rural Locale (based on population density) (n=3000)



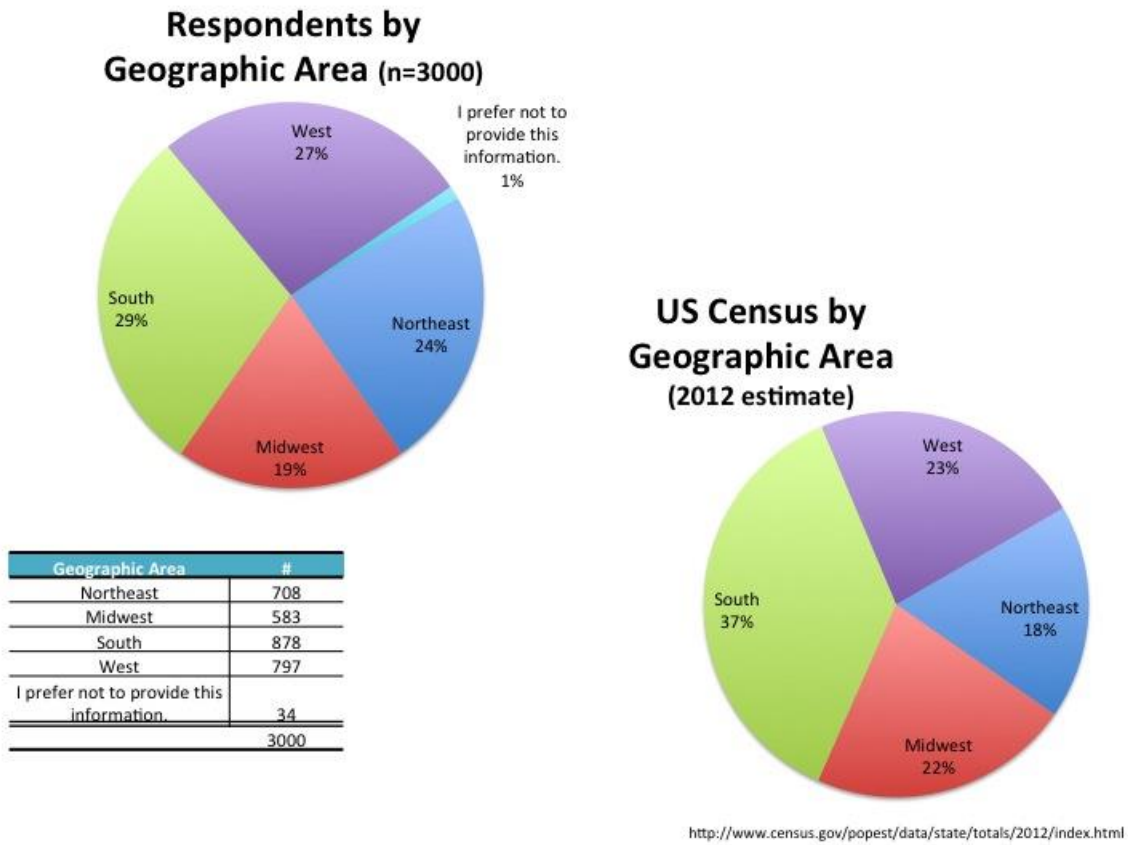
- in a city or metropolitan area with a population of 50,000 or more people -urban (n=1725)
- in a city or town with a population of at least 2,500 people, but less than 50,000 people -urban (n=880)
- in a place with fewer than 2,500 people that is located outside a city or town -rural (n=303)
- I don't know. (n=92)

<http://www.census.gov/geo/reference/urban-rural.html>

	Urban	Rural	Don't Know
CTS Survey Respondents	87%	10%	3%
US Population (2010)	81%	19%	

<http://www.census.gov/geo/reference/ua/uafacts.html>

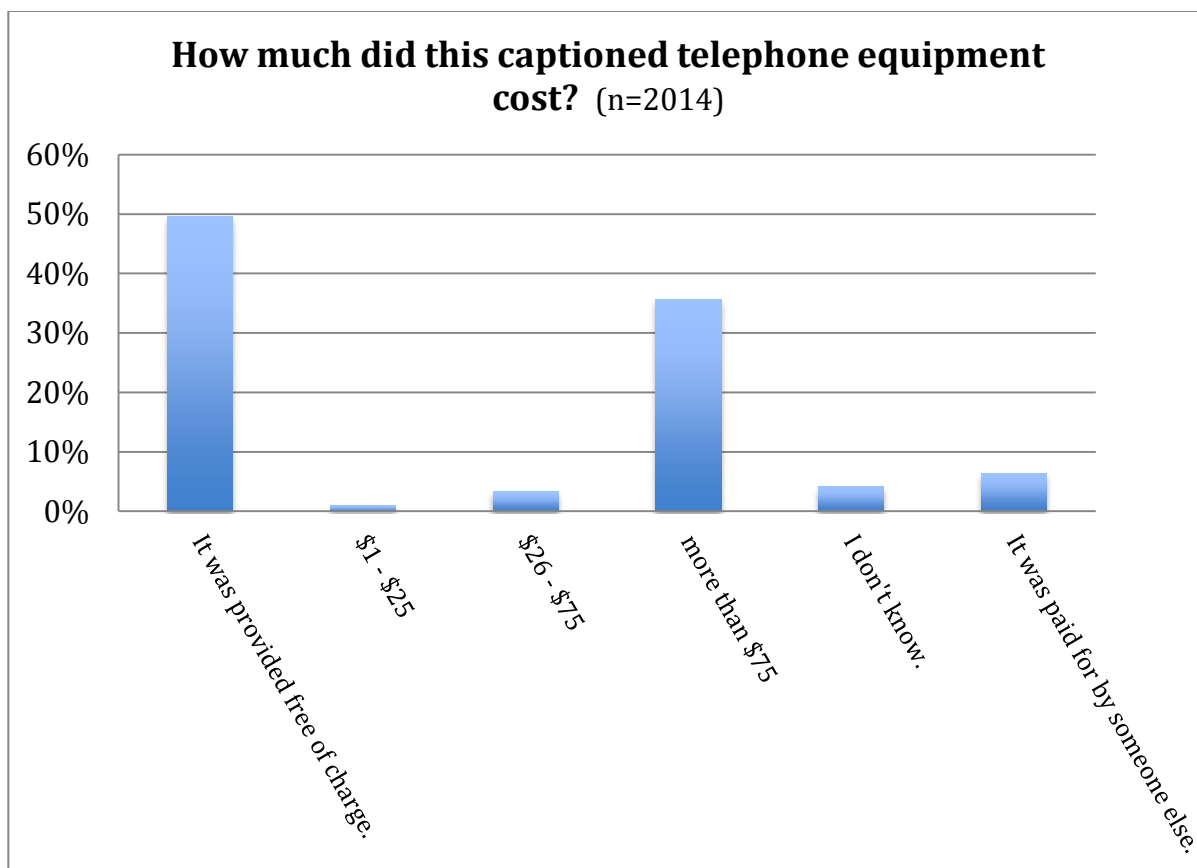
Figure 13



**Figure 14**

## 2.2. Special Standalone CTS Equipment Use

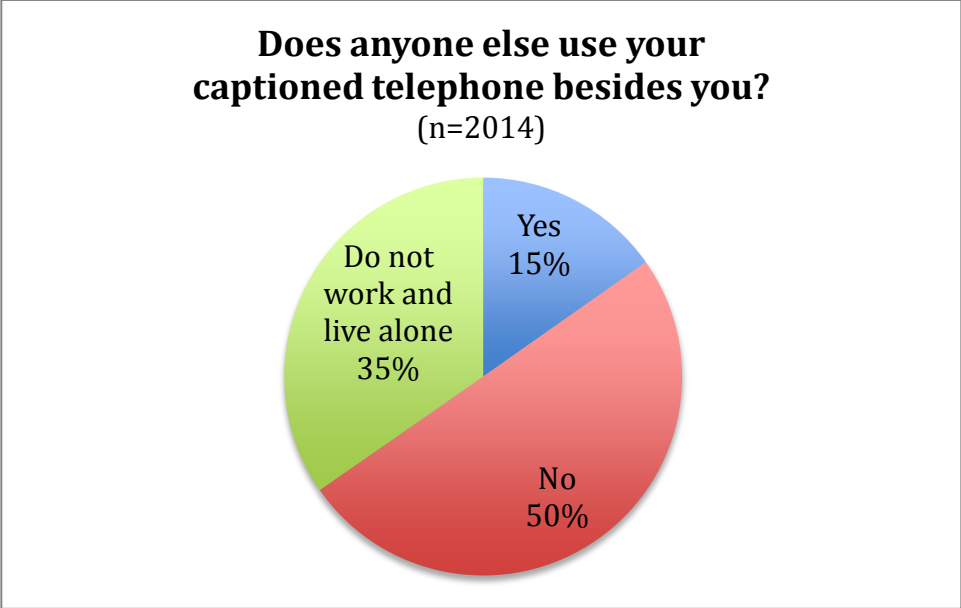
Approximately half of all users of special captioned telephones (998 of 2014) had their equipment provided free of charge, with most of the other users (716 of 2014) paying more than \$75 for their equipment (see Figure 15). This was the case (1 SD =  $\pm 3$  percentage points) regardless of how long the individuals had used captioned telephone service. However, it should be noted that the most recent users of CTS (i.e., those using CTS for 6 months or less) might be underrepresented in our sample. If we assume that the minutes of CTS usage is positively correlated with the number of CTS users over time, then we would have expected a larger number of survey respondents to be among the most recent users of CTS.



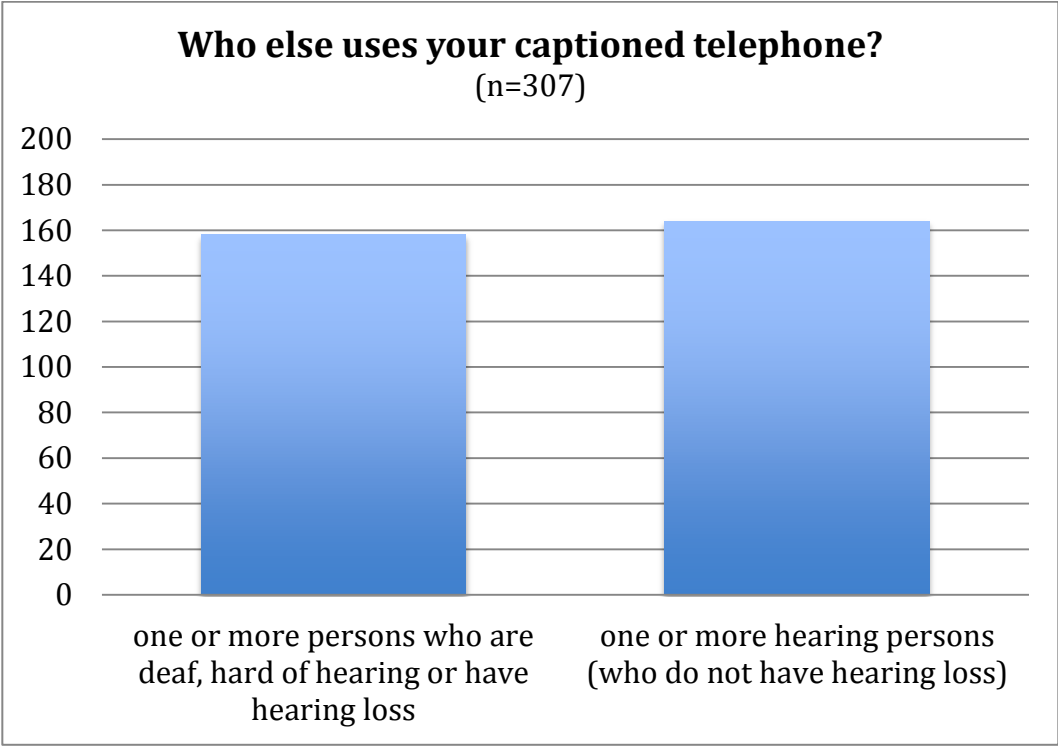
**Figure 15**

For those CTS users who both did not work and lived alone (n=698), we assumed that no one else was regularly using their captioned telephone. We asked all other users of special standalone telephones if anyone else used their captioned telephone. Of those (n=1316), a little more than three-quarters (77%; 1009 of 1316) reported that no one else used their captioned telephone besides them (see Figure 16), while about a quarter (23%; 307 of 1316) reported that others use their captioned telephone. About half of those who shared their captioned telephone (53%; 164 of 307) did so with one or more hearing persons (who do not have hearing loss) (see Figure 17). This suggests that only about 8% of all special captioned telephone users in our sample share their phone with members of the household without hearing loss.





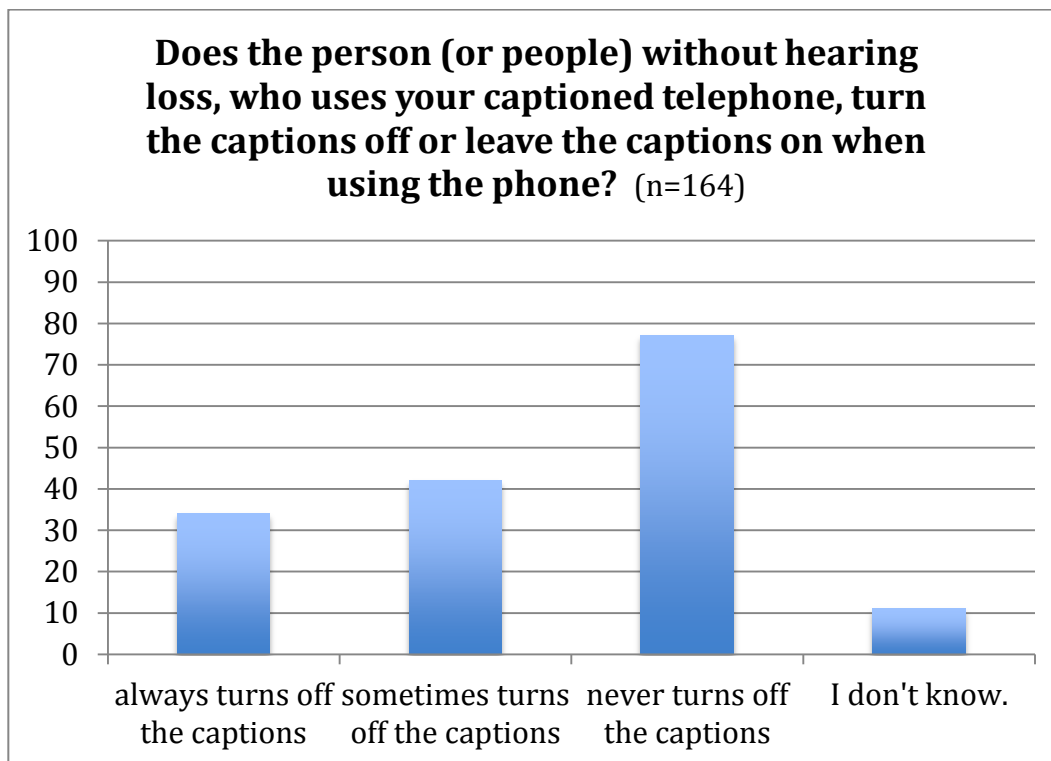
**Figure 16**



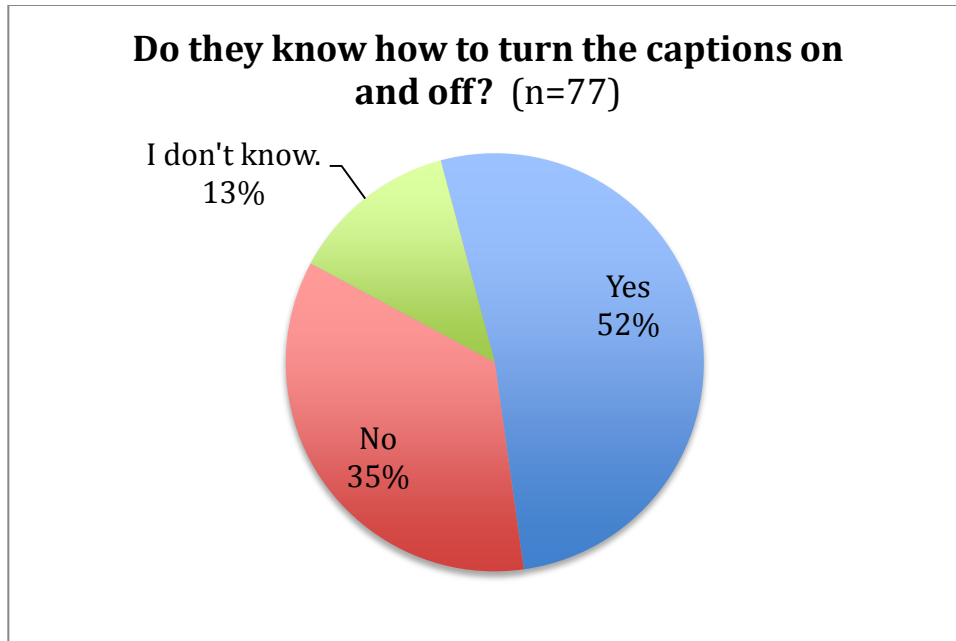
**Figure 17**

Among the 164 CTS users who share their equipment, about half (46%; 76 of 164) either always or sometimes turn off the captions, while the other half (47%; 77 of 164) never turn off

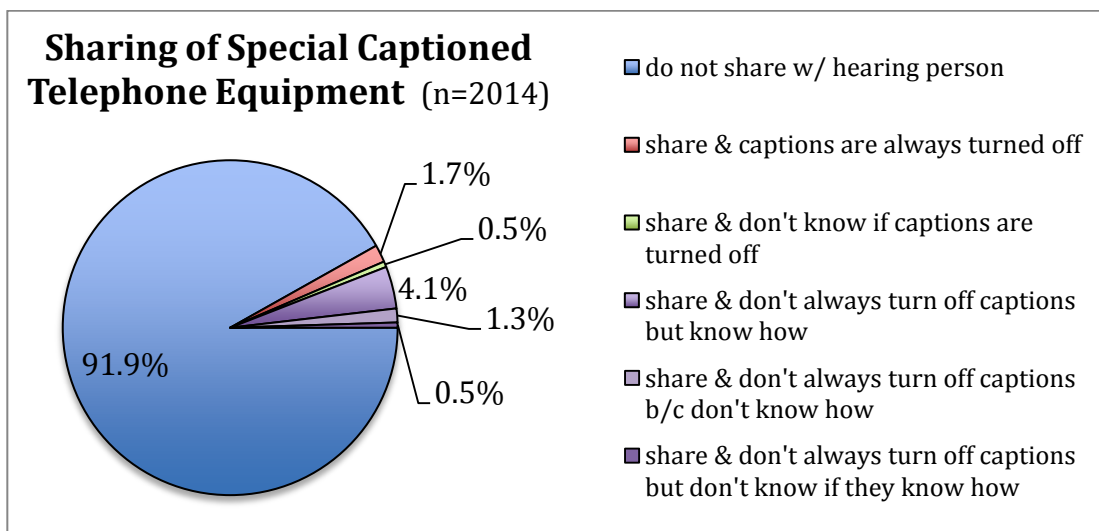
the captions (see Figure 18). Of those hearing individuals who were reported to never turn off the captions, about a third (35%; 27 of 77) do not know how to turn the captions on and off (see Figure 19). Those 27 individuals represent only about 1% of all special captioned telephone users in our sample. Overall, the survey found that 119 out of 164 users who share their equipment potentially misuse CTS (6% out of a total of 2014 CTS users) (see Figure 20).



**Figure 18**



**Figure 19**



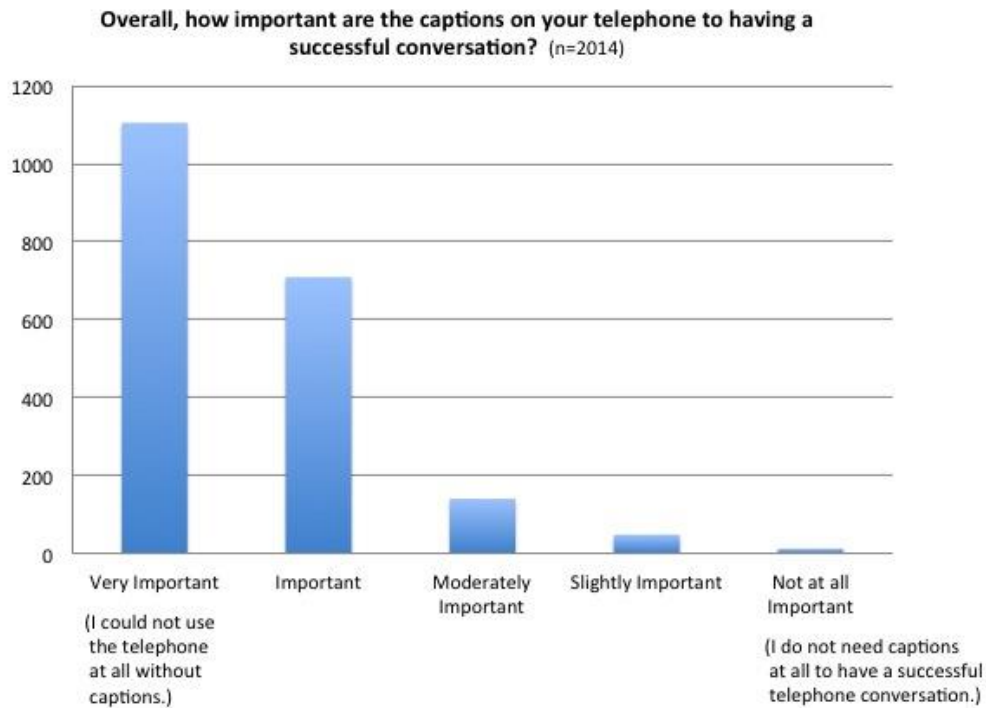
**Figure 20**

### 2.3. Importance of and Satisfaction with Captions among CTS Users

Almost all special captioned telephone users (90%; 1814 of 2014) reported that the captions on their telephone are either very important or important to having a successful conversation (see Figure 21). For this survey question, the endpoints of the importance scale were anchored with

explanatory text such that a rating of “very important” indicated that the individual could not use the telephone at all without captions and a rating of “not at all important” indicated that the individual did not need captions at all to have a successful telephone conversation.

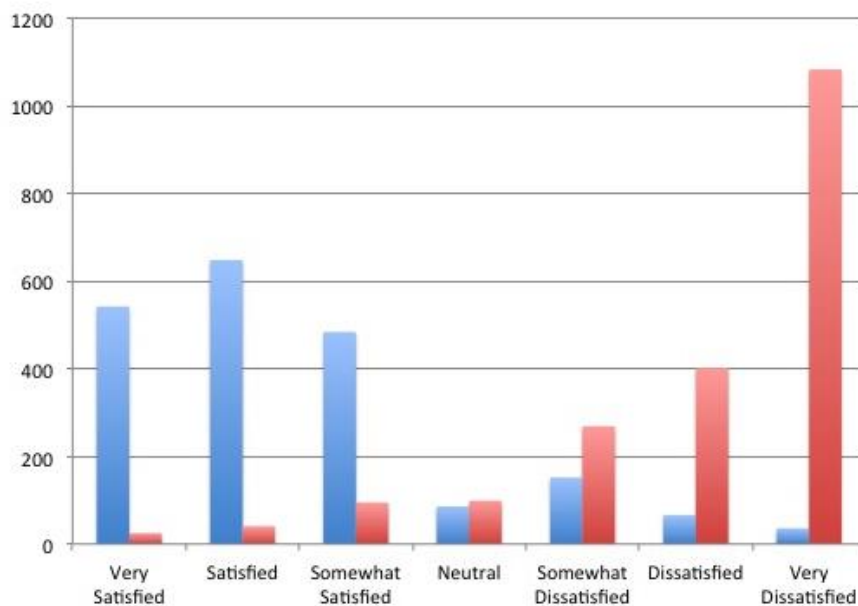
Two survey questions regarding satisfaction with captions were asked. The first question asked about overall satisfaction with communication with the other person on the call when using captions. The follow-up question asked how satisfied the individual thinks s/he would be if, in the same situation, captions were not available. About 60% of captioned telephone users (1190 of 2014) reported being either very satisfied or satisfied with telephone communication when using captions. Even more (74%; 1485 of 2014) reported that, in the same situation, they would be very dissatisfied or dissatisfied with telephone communication if captions were not available (Figure 22). The responses to these two questions were inversely related, but the relationship is not perfect. This is likely due to captioning satisfaction being mitigated by problems CTS users experience with their captioned telephone and service (e.g., too much delay between when the other person on the call talks and when the captions appear, too many errors in the captions, or variability in captioning quality from call to call). These problems however, do not affect the need for captions in order to have a successful telephone conversation, especially for the more than half of all CTS users (55%; 1105 of 2014) who reported they could not use the telephone at all without captions.



**Figure 21**

**Overall, how satisfied or dissatisfied are you communicating with the other person on the call when using captions? (n=2014)**

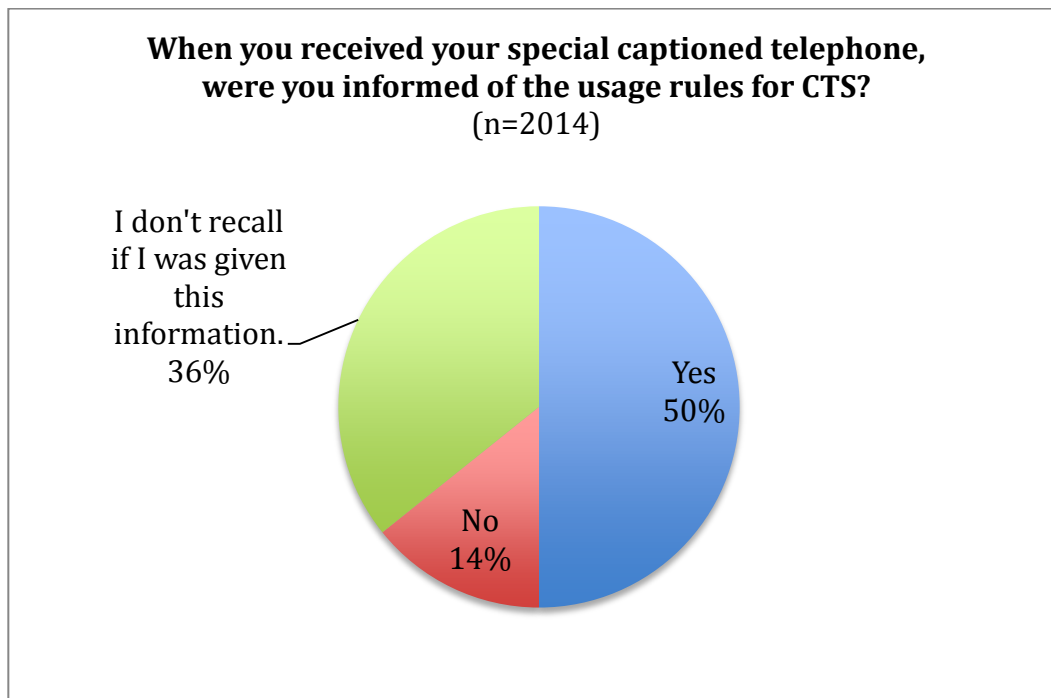
**In the same situation, how satisfied or dissatisfied do you think you would be communicating with the other person on the call if you were unable to use captions? (n=2014)**



**Figure 22**

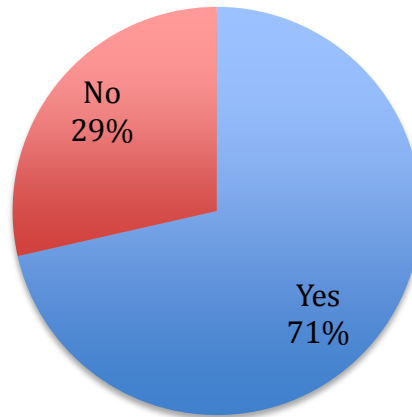
## 2.4. Knowledge of CTS Usage Rules and Funding Source

Only half of the CTS users in our survey (50%; 1007 of 2014) recalled being informed of the usage rules when they received their special captioned telephone. About a third (36%; 720 of 2014) could not recall whether they were informed that 1) captioned telephones are intended for use by people with hearing loss, and 2) people who do not require captioning support for their telephone communications should only use the telephone with the captions feature turned off. The other 14% (287 of 2014) reported that they were not informed of the usage rules for CTS when they received their special captioned telephones (see Figure 23). Regarding the funding source for CTS, over two-thirds of the CTS users (71%; 1439 of 2014) reported being familiar with captioned telephone calls being charged to either a state or federal fund so that individuals with hearing loss may use CTS at no extra charge to them (see Figure 24).



**Figure 23**

**Are you familiar with the following?  
The cost of every captioned telephone call is charged to  
either a state or federal fund, which allows people with  
hearing disabilities to place and receive captioned  
telephone calls at no extra charge to them. (n=2014)**



**Figure 24**

### **3. Discussion: Evidence for Fraud or Misuse**

Overall, this survey of 2014 special captioned telephone users does not support either fraud or misuse as the source of growth in IP-CTS. The survey showed no relationship between the length of CTS use and the cost of equipment. Almost all the survey respondents who use CTS and a special captioned telephone report that the captions are either very important or important for having a successful telephone conversation, and moreover, half of these individuals indicated by their responses that they could not have a telephone conversation at all without captions. Only about 8% of special captioned telephone users report sharing their telephone with hearing members of their household, and still fewer (6%) report that those hearing individuals do not always turn off the captions on the telephone or do not know how to turn off the captions on the telephone. This did not appear to vary by the length of CTS use, but this needs to be investigated

further. While there are results that suggest potential misuse of CTS, the numbers are so small that they do not support misuse as the source of growth in IP-CTS. These results do indicate that further consumer education regarding the usage rules for CTS may be helpful. There may be a need for additional emphasis of the rules among consumers who use captioned telephone services and members of their households when they receive their special captioned telephone equipment. Consumer education is also indicated to improve familiarity among consumers regarding the funding source for CTS.

This initial analysis of our survey results addresses specific questions raised by the FCC in their NPRM on IP-CTS. Our survey covers additional topics related to CTS and more in-depth information about the hearing loss characteristics and hearing device use of our sample that is not reported here, but which may be of interest to the FCC. In particular, we inquired about how consumers found out about captioned telephone service, which special captioned telephone equipment they use and how they obtained it, which captioned telephone service they use, how often they use their caption telephones with captions turned on for incoming and outgoing calls separately, what circumstances lead them to turn the captions off, what, if any, problems they are currently experiencing with their captioned telephone and service and finally, for those who did not use CTS, whether there were any particular reasons why they did not use the service. Information collected on hearing and device use characteristics included their degree of hearing loss in each ear, self-identity, whether they had ever received a hearing test and retained a copy of the results that they could easily provide, and which, if any, hearing device(s) they use.

We are still in the process of completing a fuller analysis of our survey results that include the topics listed above, as well as, the interrelation between certain topics. We hope to have this



fuller analysis completed in the coming weeks and will be happy to arrange an in-person meeting with the FCC to discuss our findings in more detail at that time.

Respectfully submitted,

On behalf of the RERC-TA<sup>1</sup>:

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